

WHAT IS CLAIMED IS:

- 1 1. A pulse battery comprising an electrode having at least two
2 electroactive materials as components of the same electrode, wherein said
3 electroactive materials have different discharge potentials, charging potentials and
4 voltage outputs, a first of said materials providing a voltage output of a
5 predetermined level and a second of said materials lowering the overall charging
6 voltage of said electrode below that of said first material, and wherein said second
7 material is present in an amount of at least 5 weight percent.
- 1 2. A pulse battery according to claim 1, comprising a negative electrode
2 having at least two electroactive materials as components of the same electrode,
3 said materials being selected from the group consisting of zinc, gallium, tin,
4 cadmium, lead, indium, bismuth and metal hydrides.
- 1 3. A pulse battery according to claim 2, wherein said electrode is a mixed
2 electrode having a pair of electroactive materials, said pair being selected from
3 the group consisting of zinc/tin, zinc/lead, zinc/indium, tin/lead and metal
4 hydride/lead.
- 1 4. A pulse battery according to claim 2, comprising a positive electrode
2 having at least two electroactive materials as components of the same electrode,
3 said materials being selected from the group consisting of nickel hydroxide,
4 manganese dioxide and silver oxide.
- 1 5. A pulse battery according to claim 1, wherein said two electroactive
2 materials are present in a ratio to each other of between 70:30 and 30:70 weight
3 percent.
- 1 6. A pulse battery according to claim 1, wherein said two electroactive
2 materials are present in a ratio to each other of between 40:60 and 60:40 weight
3 percent.
- 1 7. A pulse battery according to claim 2, in parallel circuit with an energy
2 battery, as herein defined.
- 1 8. A pulse battery according to claim 1, wherein said electrode is a mixed
2 electrode comprising at least three electroactive materials.

1 9. A battery power supply, comprising:
2 a pulse battery with a mixed electrode having at least two electroactive
3 materials as components of the same electrode, said electroactive materials having
4 different discharge potentials;
5 an energy battery connected in parallel with said pulse battery;
6 a circuit formed by said interconnected pulse and energy batteries being
7 connectable to a load such that when said load reaches a first level, said load is
8 satisfied primarily by a power capacity of said energy battery and when said load
9 reaches a second level, said load is satisfied substantially by a contribution by said
10 pulse battery.

1 10. A power supply as in claim 9, wherein said pulse battery is configured
2 such that it is charged by said energy battery at times when said load is at said
3 first level.

1 11. A power supply for an appliance characterized by a time-varying load,
2 comprising:
3 first and second batteries connected in parallel;
4 said first battery providing substantially all of the energy requirement of
5 said load over a discharge history of said power supply;
6 said second battery being configured to discharge during intervals of time
7 in which said load is above a first level and to be recharged by said first battery
8 when said load drops below said first level, whereby a power capacity of said first
9 battery is supplemented by a power capacity of said second battery by effectively
10 leveling the load demanded by said first battery.

1 12. A power supply as in claim 11, wherein said second battery obtains its
2 ability to discharge and recharge as claimed by virtue of its having a mixed
3 electrode having at least two electroactive materials as components of the same
4 electrode.

1 13. A battery power supply, comprising:
2 a pulse battery with a mixed electrode having at least two electroactive
3 materials as components of the same electrode, said electroactive materials having
4 different charging potentials;

5 an energy battery connected in parallel with said pulse battery;
6 a circuit formed by said interconnected pulse and energy batteries being
7 connectable to a load such that when said load reaches a first level, said load is
8 satisfied primarily by a power capacity of said energy battery and when said load
9 reaches a second level, said load is satisfied substantially by a contribution by said
10 pulse battery.

1 14. A battery power supply, comprising:

2 a pulse battery with a mixed electrode having at least two electroactive
3 materials as components of the same electrode, said electroactive materials having
4 different charging potentials;

5 an energy battery connected in parallel with said pulse battery;

6 a circuit formed by said interconnected pulse and energy batteries being
7 connectable to a load such that when said load reaches a first level, said load is
8 satisfied primarily by a power capacity of said energy battery and when said load
9 reaches a second level, said load is satisfied substantially by a contribution by said
10 pulse battery.

1 15. A battery power supply, comprising:

2 a battery connected in parallel to an electrical energy storage device;
3 said battery and electrical energy storage device being connectable to a
4 load;

5 said electrical energy storage device being capable of storing electrical
6 energy from said battery when said load is below a first level and of releasing said
7 electrical energy when said load is above said first level;

8 said electrical energy storage device dissipating energy from said battery
9 when said load is substantially zero;

10 a control with a sensor connected to detect a current level said load;

11 a disconnect switch connected between said electrical energy storage
12 device and said battery to disconnect said electrical energy storage device from
13 said battery, selectively;

14 said control configured to disconnect said electrical energy storage device
15 from said battery responsively to said disconnect switch.

1 16. A power supply as in claim 15, wherein said control is configured to
2 disconnect said electrical energy storage device from said battery when said load
3 is below said first level.

1 17. A power supply as in claim 15, wherein:
2 said battery includes a primary portion and an auxiliary portion
3 connectable in series by an internal switch;
4 said internal switch being connected to said control and switched in
5 concert with said disconnect switch to provide a lower voltage of said battery
6 when said load is below said first level.

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